

CLAIMS

1. A fingerprint authentication method (20) for a user fingerprint image (UFI) based on a plurality of control fingerprint images (CFI), comprising:
 - (S24) detecting at least one control point within the user fingerprint image (UFI) and at least one control point within each control fingerprint image (CFI);
 - (S26) superimposing the user fingerprint image (UFI) with each control fingerprint image (CFI) as a function of a movement of one or more control points within at least one of the user fingerprint image (UFI) and one or more of the control fingerprint images (CFI); and
 - (S28) authenticating a first control fingerprint image (CFI) having a shortest superimposition distance as an identified fingerprint image (IFI).
2. The fingerprint authentication method (20) of claim 1, further comprising:
 - (S22) deriving the user fingerprint image (UFI) from a pressure map (PM), wherein the user fingerprint image (UFI) is a black and white fingerprint image.
3. The fingerprint authentication method (20) of claim 1, further comprising:
 - (S22) deriving the user fingerprint image (UFI) from a pressure map (PM), wherein the user fingerprint image (UFI) is a grayscale fingerprint image.
4. The fingerprint authentication method (20) of claim 1, superimposing the user fingerprint image (UFI) with each control fingerprint image (CFI) as a function of a movement of the control points includes:
 - (S64) moving the detected control points within at least one of the user fingerprint image (UFI) and a first control fingerprint image (CFI) to superimpose a first set of ridges of the user fingerprint image (UFI) and a second set of ridges of the first control fingerprint image (CFI)
5. The fingerprint authentication method (20) of claim 4, wherein (S28) authenticating of the control fingerprint image (CFI) having the shortest superimposition distance with the user fingerprint image (UFI) as an identified fingerprint image (IFI) includes:

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(S72) sorting a group of superimposition distances based on a number of control point movement steps; and

(S74) selecting a superimposition distance having the fewest control point movement steps as the shortest superimposition distance.

6. A fingerprint identification system (80) for a user fingerprint image (UFI) based on a plurality of control fingerprint images (CFI), comprising:

(S24) means for detecting at least one control point within the user fingerprint image (UFI) and at least one control point within each control fingerprint image (CFI);

(S26) means for superimposing the user fingerprint image (UFI) with each control fingerprint image (CFI) as a function of a movement of one or more control points within at least one of the user fingerprint image (UFI) and one or more of the control fingerprint images (CFI); and

(S28) means for authenticating a first control fingerprint image (CFI) having a shortest superimposition distance as an identified fingerprint image (IFI).

7. The fingerprint identification system (80) of claim 6, further comprising:

(S22) means for deriving the user fingerprint image (UFI) from the pressure map (PM), wherein the user fingerprint image (UFI) is a black and white fingerprint image.

8. The fingerprint identification system (80) of claim 6, further comprising:

(S22) means for deriving the user fingerprint image (UFI) from the pressure map (PM), wherein the user fingerprint image (UFI) is a grayscale fingerprint image.

9. A fingerprint identification system, comprising:

• a database (50) operable to store a plurality of control fingerprint images (CFI); and
a fingerprint authentication module (41) operable to retrieve at least two control fingerprint images (CFI) from the database (50) to thereby authenticate one of the control fingerprint images (CFI) with a user fingerprint image (UFI),

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wherein the fingerprint authentication module (41) is further operable to detect at least one control point within a user fingerprint image (UFI) and at least one control point within each control fingerprint images (CFI);

wherein the fingerprint authentication module (41) is further operable to superimpose the user fingerprint image (UFI) with each control fingerprint image (CFI) as a function of a movement of one or more control points within the at least one of the user fingerprint image (UFI) and one or more of the control fingerprint images (CFI); and

wherein the fingerprint authentication module (41) is further operable to authenticate the control fingerprint image (CFI) having the shortest superimposition distance as an identified fingerprint image (IFI).

10. The fingerprint identification system of claim 9, wherein the fingerprint authentication module (41) is further operable to derive the user fingerprint image (UFI) from a pressure map (PM), the user fingerprint image (UFI) being a black and white fingerprint image.

11. The fingerprint identification system of claim 9, wherein the fingerprint authentication module (41) is further operable to derive the user fingerprint image (UFI) from a pressure map (PM), the user fingerprint image (UFI) being a grayscale fingerprint image.

12. The fingerprint identification system of claim 9, wherein, during a superimposing of the user fingerprint image (UFI) with each control fingerprint image (CFI) as a function of a movement of one or more control points within the at least one of the user fingerprint image (UFI) and one or more of the control fingerprint images (CFI), the fingerprint authentication module (41) is further operable to move one or more control points within at least one of the user fingerprint image (UFI) and a first control fingerprint image (CFI) to superimpose a first set of ridges of the user fingerprint image (UFI) and a second set of ridges of the first control fingerprint image (CFI).

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13. The fingerprint identification system of claim 9, wherein, during an authentication of the control fingerprint image (CFI) having the shortest superimposition distance as the identified fingerprint image (IFI), the fingerprint authentication module (41) is further operable to sort a group of superimposition distances based on a number of control point movement steps, and to select a superimposition distance having the fewest control point movement steps as the shortest superimposition distance.